

NICHOLAS, D.  
Appl. No. 10/505,281  
December 27, 2007

**REMARKS/ARGUMENTS**

In view of the amendments and remarks herein, favorable reconsideration and allowance of this application are respectfully requested. By this Amendment, claims 1 and 15 have been amended. Claims 1, 2, 5-10, 12-16 and 18-20 are pending for further examination.

Claims 1, 2, 5-10, 12-16 and 18-20 have been rejected under 35 U.S.C. §112, first paragraph, for failing to comply with the enablement requirement. Applicant has amended the specification to include the CAS Nos. and the common names associated with the various tradenames originally presented with the specification. This information was available on the material data sheets for these chemicals, and copies of those sheets have been provided herewith as evidence. Thus, as a description of exemplary chemicals usable in the claimed method has now been included, Applicant respectfully requests withdrawal of this objection. Since the name of the company producing these chemicals and the tradenames were originally provided, and since the CAS Nos. were available on the Material Data Sheets for these chemicals, Applicant submits that the amendment to the specification does not constitute new matter.

Claims 1, 2, 5-10, 12-16 and 18-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Vitalis et al. (U.S. Pat. 3,756,959) in view of Fullinwider et al. (U.S. Pat. 4,014,801). Applicant respectfully submits that the applied references do not teach or suggest all elements of the claimed combination as amended.

For example, independent claims 1 and 15 both recite, *inter alia*, “wherein the solid phase is free of oil.”

According to Vitalis, “the flocculated solids component contains essentially all of the undisolvable soldis... These solids often contains [sic] minor quantities of water as well as mineral oil components. Depending upon the thickness of the mineral oils which are fed to the system, because of the viscosity of the mass, considerable oil may remain with the solids.” (5:1-12). This solid waste must then be burned or buried. (5:13-25). Applicant’s process, on the other hand, produces clean solids, such as sand, which may be redistributed on beaches. As Fullinwider is silent on the notion of clean solids being produced from the process presented therein, the combination of Vitalis and Fullinwider does not teach or suggest “wherein the solid phase is free of oil.”

Thus, claims 1 and 15 should be allowable over the prior art of record. Claims 2, 5-10, 12-14, 16 and 18-20 should be allowable based at least on their dependency from allowable claims 1 and 15.

For at least the foregoing reasons, Applicant respectfully submits that the invention defined by the amended claims herein is not taught or suggested by the prior art of record. Thus, withdrawal of the rejections and allowance of this application are earnestly solicited.

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Respectfully submitted,

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## **Material Safety Data Sheet**

### **HLC2003**

#### **1. Product Identification**

**CAS No.: 7664-93-9**

#### **2. Hazards Identification**

##### **Emergency Overview**

**DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR CONTACTED WITH SKIN. HARMFUL IF INHALED. AFFECTS TEETH. WATER REACTIVE.**

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Health Rating: 3 - Severe

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Water Reactive)

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

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#### **Potential Health Effects**

##### **Inhalation:**

Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.

##### **Ingestion:**

Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death. Can cause sore throat, vomiting, diarrhea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. Circulatory shock is often the immediate cause of death.

##### **Skin Contact:**

Corrosive. Symptoms of redness, pain, and severe burn can occur. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow

skin contact or ingestion. Circulatory shock is often the immediate cause of death.

**Eye Contact:**

Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. Can cause blindness.

**Chronic Exposure:**

Long-term exposure to mist or vapors may cause damage to teeth.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

### **3. First Aid Measures**

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

**Ingestion:**

DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Excess liquid on skin can be neutralized with a 2% solution of bicarbonate of soda. Call a physician immediately.

**Eye Contact:**

Immediately flush eyes with a gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

### **4. Fire Fighting Measures**

**Fire:**

Concentrated material is a strong dehydrating agent. Reacts with organic materials and may cause ignition of finely divided materials on contact.

**Fire Extinguishing Media:**

Dry chemical, foam or carbon dioxide. Do not use water on material. However, water spray may be used to keep fire exposed containers cool.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving this material. Stay away from sealed containers.

### **5. Accidental Release Measures**

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 7. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

## 6 Handling and Storage

Store in a cool, dry, ventilated storage area with corrosive resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, always add HLC2003 to water, **NEVER** water to HLC2003. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

## 7. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

For HLC2003:

- OSHA Permissible Exposure Limit (PEL) -1 mg/m<sup>3</sup> (TWA)
- ACGIH Threshold Limit Value (TLV) - 1 mg/m<sup>3</sup>(TWA), 3 mg/m<sup>3</sup> (STEL).

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an noxious gas cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 8. Physical and Chemical Properties

### **Appearance:**

Clear liquid.

### **Odor:**

Odorless.

### **Solubility:**

Miscible with water, liberates much heat.

**Specific Gravity:**

1.20-1.27

**pH:**

&lt;7

**% Volatiles by volume @ 21C (70F):**

No information found.

**Vapor Density (Air=1):**

3.4

**Vapor Pressure (mm Hg):**

1 @ 145.8C (295F)

**Evaporation Rate (BuAc=1):**

No information found.

## 9. Stability and Reactivity

**Stability:**

Stable.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Water, potassium chlorate, potassium perchlorate, potassium permanganate, sodium, lithium, bases, organic material, halogens, metal acetylides, oxides and hydrides, metals, strong oxidizing and reducing agents and many other reactive substances.

**Conditions to Avoid:**

Heat, moisture, incompatibles.

## 10. Toxicological Information

**Toxicological Data:**

Oral rat LD50: 2140 mg/kg; inhalation rat LC50: 510 mg/m<sup>3</sup>/2H; standard Draize, eye rabbit, 250 ug (severe).

## 11. Ecological Information

**Environmental Fate:**

When released into the soil, HLC2003 may leach into groundwater. When released into the air, HLC2003 may be removed from the atmosphere to a moderate extent by wet deposition. When released into the air, this material may be removed from the atmosphere to a moderate extent by dry deposition.

## 12. Disposal Considerations

Dispose of container and unused contents in accordance with federal, state and local requirements.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of the seller's knowledge. However, seller makes no warranty whatsoever, expressed, implied or of merchantability regarding the accuracy of such data or the results to be obtained from the user thereof. Seller assumes no responsibility for injury to buyer or to third persons or any damage to any property. Buyer assumes all such risks.

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**Material Safety Data Sheet**  
**HPC2003**

**1. Product Identification**

CAS No.: 7778-54-3

**2. Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
HPC2003	7778-54-3	61%	Yes

**3. Hazards Identification**

**Emergency Overview**

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. WATER REACTIVE.**

Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Yellow (Reactive)

**Potential Health Effects**

**Inhalation:**

Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Inhalation may be fatal as a result of spasm inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

**Ingestion:**

Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhea.

**Skin Contact:**

Corrosive. Symptoms of redness, pain, and severe burn can occur.

**Eye Contact:**

Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns.

**Chronic Exposure:**

Repeated exposures to HPC2003 may cause bronchitis to develop with cough and/or shortness of breath.

**Aggravation of Pre-existing Conditions:**

No information found.

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## 5. Fire Fighting Measures

**Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Thermally unstable; at higher temperatures, may undergo accelerated decomposition with release of heat and oxygen.

**Explosion:**

Sealed containers may rupture when heated. An explosion can occur if either a carbon tetrachloride or a dry ammonium compound fire extinguisher is used to extinguish a fire involving HPC2003. Sensitive to mechanical impact.

**Fire Extinguishing Media:**

Use flooding quantities of water as fog or spray. Use water spray to keep fire-exposed containers cool. Avoid direct contact with water. Fight fire from protected location or maximum possible distance. Do not use dry chemical fire extinguishers containing ammonium compounds. Do not use carbon tetrachloride fire extinguishers. Do not allow water runoff to enter sewers or waterways.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

## **6. Accidental Release Measures**

Remove all sources of ignition. Keep water away from spilled material. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Pick up spill for recovery or disposal and place in a closed container. Do not seal tightly.

## **7. Handling and Storage**

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

## **8. Exposure Controls/Personal Protection**

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator.

**WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## **9. Physical and Chemical Properties**

### **Appearance:**

White or grayish-white powder.

### **Solubility:**

Soluble in water.

### **Specific Gravity:**

2.35 @ 20C

### **pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

No information found.

**Melting Point:**

Decomposes above 177C (350F), releasing oxygen.

**Vapor Density (Air=1):**

6.9

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Rapidly decomposes on exposure to air. May decompose violently if exposed to heat or direct sunlight. Thermally unstable; decomposes at 177C (350F).

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

HPC2003 is a strong oxidizer. Forms explosive compounds with ammonia and amines.

Incompatible with organic materials, nitrogen compounds and combustible materials.

**Conditions to Avoid:**

Heat, flame, moisture, dusting, sources of ignition and shock, and incompatibles.

## 11. Toxicological Information

HPC2003: LD50 oral rat 850 mg/kg.

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Dispose of container and unused contents in accordance with federal, state and local requirements.

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**Material Safety Data Sheet**  
**HGC2003**

**1. Product Identification**

CAS No.: 7782-50-5

**2. Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
HGC2003	7782-50-5	95%	Yes

**EXPOSURE LIMITS -**

PEL: 1.0 ppm; 3.0 mg/m<sup>3</sup> CEILING

TLV: 0.5 ppm; 1.5 mg/m<sup>3</sup>, TWA

STEL 1 ppm; 2.9 mg/m<sup>3</sup>

**3. Hazards Identification**

**Emergency Overview**

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. WATER REACTIVE.**

Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Yellow (Reactive)

**Potential Health Effects**

**Inhalation:**

Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, chest pain, headache, nausea, vomiting, anxiety and

feeling of suffocation. Severe exposure may be fatal as a result of spasm inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. See Toxicology Section.

**Ingestion:**

Not a likely route of exposure.

**Skin Contact:**

Corrosive. Symptoms of redness, pain, and severe burn can occur.

**Eye Contact:**

Corrosive. High concentrations or contact can cause blurred vision, redness, pain and severe tissue burns.

**Chronic Exposure:**

Above established exposure limits may result in reduced breathing capacity.

**Aggravation of Pre-existing Conditions:**

Pre-existing respiratory disorders.

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## 5. Fire Fighting Measures

Flash Point: Not Applicable

Autoignition Temperature: Not Applicable

FLAMMABLE LIMITS IN AIR, BY % VOLUME

Upper: Non-flammable

Lower: Non-flammable

**Fire and Explosion Hazard:**

HGC 2003 is non-explosive and nonflammable. However, like oxygen, it is capable of supporting combustion of certain substances. Reacts explosively, or forms explosive compounds, with many chemicals, such as acetylene, turpentine, ether, ammonia gas, hydrogen, and finely divided metals.

An explosion can occur if either a carbon tetrachloride or a dry ammonium compound fire extinguisher is used to extinguish a fire involving HGC2003. Not sensitive to static discharge or mechanical impact.

**Fire Extinguishing Media:**

Cool fire exposed containers with water spray. Use agents appropriate for surrounding fire.

Fight fire from protected location or maximum possible distance. Do not use carbon tetrachloride or dry chemical fire extinguishers containing ammonium compounds.

**Fire Fighting Procedures:**

HGC 2003 containers should be removed from fire zone immediately. If no HGC 2003 is escaping, water should be applied to cool containers that cannot be moved. If it is necessary to

stop the flow of HGC 2003, use water spray to direct escaping HGC 2003 away from persons effecting the shut-off. Keep unauthorized personnel removed and upwind.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH/MSHA approved positive pressure self-contained breathing apparatus with full face piece.

## 6. Accidental Release Measures

**Personal Precautions:**

Evacuate unnecessary personnel. Keep unprotected personnel upwind of the spill area. Follow protective measures provided under Personal Protection in Section 8.

**Environmental Precautions:**

Contain liquids and prevent discharges to streams or sewers, control or stop the loss of volatile materials to the atmosphere. Large leaks may require environmental consideration and possible evacuation. Do not apply water to the leak. Spills or releases should be reported, if required, to the appropriate local agencies.

**Methods for Cleaning Up:**

Move leaking container to an isolated area. HGC 2003 can be absorbed into an alkaline solution such as caustic soda, soda ash or hydrated lime.

## 7. Handling and Storage

**Handling:**

Follow safety procedures for containers of compressed gases. Avoid breathing vapor or gas. Do not get in eyes, on skin, on clothing. Do not heat container. Wear all protective equipment as described in Section 8.

**Special Mixing and Handling Instructions:**

Do not allow contact with materials as noted in Section 10.

**Storage:**

Store containers in a well ventilated area of low fire potential and away from incompatible materials (see Section 10). Keep away from heat and sources of ignition. Protect container from weather and physical damage. Regularly test and inspect piping and containment used for HGC 2003.

## 8. Exposure Controls/Personal Protection

**Ventilation System**

A local exhaust and/or general room ventilation system is recommended at points of emission to maintain levels of airborne contaminants below exposure limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Odor may indicate concentrations above exposure limits. Provide venting for low-lying areas. Use closed systems when possible. Maintain concentrations below all applicable exposure limits.

**Personal Respirators (NIOSH Approved):**

Use NIOSH/MSHA supplied air respirator in positive pressure mode for tank and confined space entry. Wear a NIOSH/MSHA approved organic vapor acid-gas respirator following manufacturer's recommendations. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear chemical resistant gloves such as rubber, neoprene or vinyl. Wash contaminated clothing and dry before reuse. Wear protective clothing to minimize skin contact. Whenever there is a possibility of splash or contact wear a chemical resistant full body suit and boots.

**Eye Protection:**

Wear chemical safety goggles plus full face shield to protect against splashing when appropriate.

**Other:**

Emergency shower and eyewash facility should be in close proximity.

## 9. Physical and Chemical Properties

**Appearance and Odor:** Compressed amber color liquid with irritating odor.

**Odor Threshold:** Approximately 2 ppm

**Specific Gravity:** (Water=1): 1.4 @ 15.4°C

**Vapor Pressure:** 2748mm Hg @ 0°C

**Vapor Density (Air=1):** 2.5

**Density:** 11.7 lbs./gallon @15.6°C

**Evaporation Rate:** Not applicable

**% Volatiles by Wt:** 95%

**Solubility in Water (% by wt.):** 0.7% @ 20°C

**pH:** 0.7% solution has pH 5.5

**Octanol/Water Partition Coefficient:** Not Available

**Thermal Decomposition Temperature:** Not available

**VOC (g/l. by wt.):** Not applicable

## 10. Stability and Reactivity

**Chemical Stability:**

Stable

**Reacts with:**

Metals, Water and Alkalies

**Hazardous Polymerization:**

Will not Occur

**Hazardous Decomposition Products:**

None.

**Incompatibilities:**

HGC2003 is a Strong oxidizer. Avoid contact with reducing agents, combustible materials. Keep away from materials such as acetylene, turpentine and other hydrocarbons, ammonia, amines, hydrogen, ether, powdered metals, sulfur and aluminum. Incompatible with organic materials, nitrogen compounds and combustible materials. Reacts with hydrogen sulfide and water forming acid. Combines with carbon monoxide and sulfur dioxide forming phosgene and sulfonyl chloride. Moist HGS2003 is highly corrosive to most metals. HGS2003 reaction to some organic compounds can be explosive.

## 11. Toxicological Information

The hazard of HGC2003 at different concentrations is reported to be as follows:

0.2-0.5 ppm = No toxic long term effect

1 - 3 ppm = Definite odor; irritation of eyes and nose

5 - 8 ppm = Throat, eye and mucous membrane irritation

30 ppm = Intense coughing fits

34 - 51 ppm = Lethal in 1 to 1.5 hours exposure

40 - 60 ppm = Exposure for 30-60 minutes without effective respiration may cause bronchitis, pulmonary edema or bronchopneumonia  
100 ppm = May be lethal after 50 minutes exposure (estimated)  
430 ppm = Lowest concentration known to cause lethality after 30 minutes of exposure  
1000 ppm = May be fatal with a few deep breaths

## **12. Ecological Information**

### **Environmental Fate:**

#### **Fish:**

LC50 (96 hr.) (Rainbow Trout) 14-291 ug/L

LC50 (96 hr.) (Stripped Bass) 140-230 ug/L

#### **Aquatic Invertebrates:**

LC50 (48 hr.) (Water Flea) 30-150 ug/L

LOEC MORTALITY (12 hr.) (Grass Shrimp) 150-300 ug/L

LOEC MORTALITY (13 hr.) (Scud) 2500 ug/L

#### **Plants:**

LOEC PGR (5-10 day) (Green Algae) 760-1520 ug/L

LOEC PGR (18 day) (Blue-Green Algae) 100-10,000 ug/L

## **13. Disposal Considerations**

Dispose of container and unused contents in accordance with local State requirements.

## **14. Transport Information**

DOT HAZARD CLASS: 2.3

DOT IDENTIFICATION NUMBER: UN1017

DOT HAZARDOUS SUBSTANCE(S): RQ 10 Lbs. (HGC2003)

ADDITIONAL DESCRIPTION REQUIREMENT: Toxic-Inhalation Hazard, Zone B

### **SARA/TITLE III HAZARD CATEGORIES:**

Immediate(Acute) Health: YES

Reactive Hazard: NO

Delayed(Chronic) Health: NO

Sudden Release of Pressure: YES

Fire Hazard: YES

### **HMIS HAZARD RATINGS:**

HEALTH HAZARD: 3

FIRE HAZARD: 0

REACTIVITY: 1

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**Material Safety Data Sheet**  
**HSC2003**

**1. Product Identification**

**CAS No.: 64742638 & 5989-27-5**

**2. Product Composition**

Contains: Hydrotreated Distillate (in range 45-50%) & Terpene Hydrocarbons (in range 45-50%)  
Use: Paraffin / Asphaltene Solubilizer

**3. Hazards Identification**

**Emergency Overview**

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**DANGER! FLAMMABLE. HARMFUL IF INHALED OR SWALLOWED. IRRITATING TO SKIN AND EYES.**

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**Safety Hazards**

Flammable. Keep away from heat, sparks and open flame.

**Potential Health Effects -**

**Inhalation:**

Inhalation of vapor or mist at high concentrations may cause irritation the nose, throat and respiratory tract characterized by nasal discomfort and discharge, coughing, nausea, headache, drowsiness and chest pain.

**Ingestion:**

Harmful if swallowed. May cause abdominal discomfort, nausea, vomiting, headache, and diarrhea.

**Skin Contact:**

Exposure may cause mild irritation characterized by slight redness. Prolonged exposure can cause drying, defatting and dermatitis of the skin.

**Eye Contact:**

Causes mild eye irritation, experienced as discomfort or pain, excess blinking and tear production, redness, swelling and chemical burn of the eye.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

## 4. First Aid Measures

### **Symptoms and effects**

Irritation of the skin, eyes, nose, throat and respiratory tract. Causes headache, nausea, and drowsiness.

### **Inhalation:**

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

### **Ingestion:**

DO NOT INDUCE VOMITING. If victim is conscious and alert, rinse mouth with water then give one glass of water or milk to drink. Never give anything by mouth to an unconscious person. Possible aspiration hazard. Call a physician immediately.

### **Skin Contact:**

Immediately remove contaminated clothing and shoes. Thoroughly wash skin with plenty of soap and water for at least 15 minutes. Get medical aid if irritation develops or persists. Discard contaminated clothing in a manner which limits further exposure.

### **Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician immediately.

### **Advice to physicians**

Dermatitis may result from prolonged or repeated exposure. Aspiration into the lungs may cause chemical pneumonia.

## 5. Fire Fighting Measures

### **Fire Extinguishing Media:**

For fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. For leaks or spills which have not ignited, use water spray to disperse the vapours and to provide protection for persons attempting to stop the leak.

### **General Information:**

In the event of a fire, wear full protective gear and a SHA/NIOSH (approved or equivalent) self-contained breathing apparatus with full facepiece operated in pressure-demand.

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Prevent contamination of ground or surface water.

## 7. Handling and Storage

### **Handling:**

Wash thoroughly after handling. Use local exhaust extraction to provide adequate ventilation. Avoid contact with eyes, skin and clothing. Avoid ingestion and inhalation. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Do not empty into drains.

Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, open flames, static electricity or other sources of ignition. Dispose of all containers in an environmentally safe manner and in accordance with governmental regulations.

**Storage:**

Keep away from heat, sparks and flame. Keep away from sources of ignition. Take precautionary measures against static discharges. Keep container tightly closed when not in use. Keep container tightly closed and store in a cool, dry, well-ventilated area away from incompatible substances. Do not smoke in storage areas.

**Storage & Handling Temperatures**

Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

**Product transfer**

Take precautionary measures against static discharge. Ground all equipment when transferring material.

## **8. Exposure Controls/Personal Protection**

**Engineering Controls:**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

**Personal Respirators (NIOSH Approved):**

Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety monogoggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## **9. Physical and Chemical Properties**

**Appearance:**

Dark colored liquid

**Odor:**

Aromatic Odor.

**Solubility:**  
Negligible

**Specific Gravity/Density:**  
0.83 g/cc

**Vapor Pressure (mm Hg):**  
2 mm Hg

**Evaporation Rate (Ether=1):**  
< 1

**Boiling Point:**  
>150 degree C

**Flash Point:**  
60 degree C

## 10. Stability and Reactivity

**Stability:**  
Stable under normal temperatures and pressures.

**Hazardous Decomposition Products:**  
Carbon monoxide, carbon dioxide, smoke, and other unidentified organic compounds.

**Hazardous Polymerization:**  
Does not occur.

**Conditions to Avoid:**  
High temperatures, strong oxidizers, incompatible materials and ignition sources.

## 11. Toxicological Information

This product has not been listed in the US Toxicology Program (NTP) Annual Report nor has it been classified by the International Agency for Research on Cancer (IARC) as carcinogenic to humans. Skin contact and breathing of mists of vapors should be reduced to a minimum.

## 12. Ecological Information

This material may present environmental risks common to oil spills. This product or a component(s) is expected to be resistant to biodegradation. This product is expected to have low aquatic toxicity (LD50>1000 mg/l) and is not considered to represent a long-term danger to the aquatic environment.

## 13. Disposal Considerations

Place contaminated materials in disposal containers and dispose of in a manner consistent with applicable federal, state and local regulations.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of the seller's knowledge. However, seller makes no warranty whatsoever, expressed, implied or of merchantability regarding the accuracy of such data or the results to be obtained from the user thereof. Seller assumes no responsibility for injury to buyer or to third persons or any damage to any property. Buyer assumes all such risks.